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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,429	08/29/2001	Kung-Ha Moon	06192.0160.NPUS00	7061

7590

07/11/2003

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EXAMINER

CHUNG, DAVID Y

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/940,429

Applicant(s)

MOON ET AL.

Examiner

David Y. Chung

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. In response to applicant's arguments regarding the Election of Species requirement mailed March 19, 2003, examiner hereby withdraws the requirement and all claims have been examined on the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1, 4, 12-16, 20 and 28 rejected under 35 U.S.C. 102(e) as being anticipated by Murade (U.S. 6,262,702).

As to claims 1 and 12, Murade discloses an active matrix type liquid crystal display with high frequency data line driving. Note the display region in figure 4 which includes gate lines 31 crossing the data lines 35, thin film transistors 30 connected to the gate line and data line, and pixel electrode 11 connected to the thin film transistor. Note the gate line driving circuits 104 and the data line driving circuit 101. An external control circuit outputs positive and negative power supplies VDDY and VSSY via terminals 102. The negative power supply VSSY transmits a smaller signal voltage than the positive power supply VDDY. As can be seen from figure 4, the shielding line 85 extends from the wiring VSSY such that the power supply signal VSSY is supplied in a redundant fashion to the scanning line driving circuits 104. See column 25, lines 1-10. The portion of shielding line 85 that is closer to the display region can be considered the second signal wire, with line 87 (VDDY) construed as the first signal wire. The portion of shielding line 85 that is further from the display region is considered the first redundancy wire. This wire is formed between the first and second signal wires.

As to claim 13, Murade discloses in figure 4, an external control circuit comprising signal wires such as VDDY, VSSY, CLY, DY etc. for driving the gate driving integrated circuits 104.

As to claim 14, Murade discloses in figure 4, an external control circuit comprising signal wires such as VDDX, VSSX, CLX, DX etc. for driving the data driving integrated circuit 101.

As to claim 15, in figure 4 of Murade, the first signal voltage VDDY is a power supply voltage.

As to claim 16, in figure 4 of Murade, the second signal voltage VSSY is a ground voltage.

As to claims 4 and 20, in figure 4 of Murade, the first redundancy wire is connected to the second signal line 85, and is therefore, separated from the first signal wire 87.

As to claim 28, Murade discloses that the various wiring connected to the corresponding external terminals 102 are made of the same low-resistance metal as that used to form the data lines 35, such as aluminum. See column 25, lines 10-15.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2871

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 3, 5-11, 17-19, 21-27, 29-37 rejected under 35 U.S.C. 103(a) as being unpatentable over Murade (U.S. 6,262,702).

As to claims 2, 3, 5, 10, 11, 17-19, 21 and 22, Murade does not disclose a redundancy wire connected to the first signal wire 87. However, Murade teaches that redundant structure of shielding line 85 prevents failure of the apparatus if breakage or disconnection occurs. See column 25, lines 1-10. It was well known and obvious that this teaching has equal applicability and benefit with regard to the first signal wire 87. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form a redundant wire connected to the first signal wire 87 because the benefits taught by Murade. This redundant wire would transmit the same voltage as the first signal wire since it is electrically connected to it.

As to claims 6 and 23, Murade does not disclose a first and second redundancy wire separated from the first signal wire. However, this was an obvious matter of design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to make a first and second redundancy wire separate from the first signal wire because it was an obvious matter of design choice.

As to claims 7 and 24, Murade does not disclose forming the first redundancy wire from less oxidative conductive materials than conductive materials forming the

Art Unit: 2871

second signal wire. However, it was well known and obvious that the first redundancy wire was preferably more resistant to corrosion than the second signal wire in order to ensure electrical reliability. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form the first redundancy wire with less oxidative material than the second signal wire in order to ensure electrical reliability.

As to claims 8 and 25, Murade discloses that the control signal wires are made of material such as aluminum. See column 25, lines 10-15. Although Murade does not disclose forming the first redundancy wire from material as claimed, aluminum, copper, silver, and chromium were well known for their low resistance and high conductivity. It was well known and obvious to form wiring from any of these metals because of this. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form the first redundancy wiring from copper, silver, or chromium instead of aluminum because they were art recognized equivalents.

As to claims 9, 26 and 29, Murade does not disclose forming the first redundancy wire from the same material as the pixel electrode. However, it was well known and obvious to do this in order to be able to pattern the redundancy wires and pixel electrodes in one step, simplifying the manufacturing process and lowering costs. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form the first redundancy wires from the same material as the pixel electrode because it was cost effective.

As to claims 27, 31, 32, 34 and 35, Murade does not disclose forming the control signal wiring from the same material as the gate wiring. Murade does teach forming the control signal wiring from the same material as the data wiring, such as aluminum. See column 25, lines 10-15. It was well known and obvious to form the gate wiring from aluminum also because of its low resistance and high conductivity. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form the gate wiring from aluminum also because of the high conductivity and low resistance. This would result in the control signal wiring being formed as the same material as the gate and data wiring.

As to claims 30 and 33, Murade does not disclose a single wire for providing power to both the data and gate driving circuits. However, it was well known and obvious to do this in order to ensure that both the data and gate driving circuits receive the same signal. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form a single wire for providing power to the gate and data driving circuits in order to ensure a common voltage.

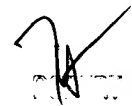
As to claims 36 and 37, Murade does not disclose the structure of pads 102 and control signal wires shown in figure 4. However, it was common and conventional to for them to include a lower wire formed by conductive materials forming the gate line, a first insulating layer covering the lower wire, a first contact hole exposing one end of the

Art Unit: 2871

lower wire and an upper wiring being formed by conductive materials for forming the data line. This allowed the control signal wires to be formed at the same time as the gate and data wires, simplifying the manufacturing process and making it more cost effective. Further, it was well known and obvious to provide multiple insulation layers and several contact holes in order to ensure that insulation between overlapping wires does not break down, causing a short. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form the control signal wiring with the structure as claimed because of the aforementioned benefits.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (703) 306-0155. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.


DAVID CHUNG
SENIOR EXAMINER
06/30/03